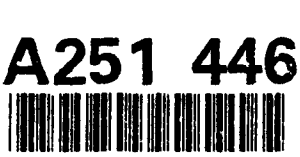

(2)

Implementation of

Electronic Funds Transfer
for
Transportation Vendor Payment

A Program for
the Defense Finance and Accounting Service
Indianapolis Center

Report PL005R2

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Executive Summary

IMPLEMENTATION OF ELECTRONIC FUNDS TRANSFER FOR TRANSPORTATION VENDOR PAYMENT

The Department of Defense has an extensive history of using electronic funds transfer (EFT) to deposit pay and benefits directly into individual bank accounts, thereby increasing the productivity of its personnel and reducing the cost of correcting errors and replacing lost checks. Now, it seeks to expand the use of EFT at the Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN) to pay transportation vendors.

Before DFAS-IN undertakes development of a production EFT system in its Transportation Operations Directorate, we recommend that it implement a prototype capability. [A similar approach in the use of electronic data interchange (EDI) techniques provided DFAS-IN with valuable lessons in the replacement of paper documents with electronic transmissions.] A prototype system would aid in designing and building the disbursing subsystem of a new transportation vendor payment system, provide experience in using EFT payment formats and communications, and give an interim EFT capability while the production system is being developed.

We also recommend that DFAS-IN take the following actions for both the prototype and production systems:

- Adopt a disbursement operating concept that accommodates payment either by EFT or check, maintains a linkage between remittance advice and the payment mechanism, and supports the National Automated Clearing House Association's Cash Concentration or Disbursement with Special Addendum and Corporate Trade Exchange EFT standards.
- Use EDI translation software to generate payment and remittance information, build an interface that generates EFT transactions, and use the Federal Reserve's FEDLINE2 software package for communications.
- Appoint a coordinator to oversee implementation of EFT for transportation payments; coordinate EFT issues with trading partners and the Federal

Reserve; and develop procedures for day-to-day operations, internal and external security, and trading-partner administration.

By taking these actions, DFAS-IN should attract participation from many transportation vendors, experience a smooth transition from current payment methods to EFT, and develop an efficient payment system for the 1990s and beyond.

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CHAPTER 1

INTRODUCTION

The Department of Defense (DoD) has an extensive history of using electronic funds transfer (EFT) to deposit pay and benefits directly into individual bank accounts, increasing the productivity of its personnel and reducing the cost of correcting errors and replacing lost checks. It now seeks to expand the use of EFT to pay transportation vendors.

DEFENSE FINANCE AND ACCOUNTING SERVICE – INDIANAPOLIS CENTER

The Defense Finance and Accounting Service – Indianapolis Center (DFAS-IN), DoD's largest transportation payment center, pays over 3 million freight, household goods, and travel-related bills annually on behalf of the Army, Air Force, and Defense Logistics Agency. The providers of those transportation services vary from the largest U.S. airlines and trucking companies, some of which submit hundreds of invoices every day, to the smallest transportation businesses, which submit as few as one or two invoices a year.

The DFAS-IN is developing a new system, Transportation Information and Payment System (TIPS), which will enable its Transportation Operations Directorate to eliminate most routine paper business documents by using electronic data interchange (EDI) and EFT. Vendors currently send their transportation vouchers to DFAS-IN either through the U.S. mail or by small package carriers. The information needed to pay each vendor is manually entered into the Disbursing and Reporting (D&R) system, which also receives manual adjustments to bills for overcharges or claims against carriers (primarily for damages) and automated adjustments (via magnetic tape) from the General Services Administration. The latter adjustments arise from overcharges discovered during postpayment audits. The D&R system consolidates all payments due a vendor on a given day, performs fiscal accounting, generates reports, and creates a tape for printing checks. The checks are then matched with voucher stubs that explain the payment, and both the check and voucher stub are mailed to the vendor.

To facilitate a smooth transition to an electronic environment, DFAS-IN is developing TIPS in three increments. The first increment will give DFAS-IN the capability to receive EDI and audit bills prior to payment. The second increment will automate the processing of claims, adjustments, and negotiable instruments. The third increment, which replaces the D&R system, will perform (or provide the necessary data to other systems) all the accounting, disbursing (including EFT), and archiving associated with transportation vouchers. That increment is scheduled to be operational by early 1993.

REPORT ORGANIZATION

In an earlier report, we presented an operating concept for use of EFT at DFAS-IN.[1] That concept called for payment by either EFT or check and for provision of remittance advice by EFT, EDI, or paper, with the payment and remittance advice mechanism selected by each vendor.[2] This report refines that operating concept based on recent EFT developments and lays out a course of action for DFAS-IN as it implements EFT to pay transportation vendors. Chapter 2 describes the payment options available to DFAS-IN, Chapter 3 outlines the functional requirements of DFAS-IN's system, and Chapter 4 addresses various implementation actions. Chapter 5 describes an EFT prototype that should give DFAS-IN personnel valuable experience in building the disbursing portion of the TIPS; it also outlines the value of the prototype and proposes an architecture and implementation plan. An appendix provides basic information on the use of EFT for vendor payments, which should be useful when DFAS-IN develops detailed EFT operating procedures.

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[1]LMI Report AL719TR1, *An Operating Concept for Electronics Funds Transfer*, Thomas W. Heard, W. Michael Bridges, and Thomas P. Hardcastle, August 1988.

[2]Unlike direct deposit of military pay, which is scheduled and predictable, payments to transportation vendors are irregular and variable. In a paper-based environment, a check is accompanied by remittance information in the form of a stub or voucher. A vendor receiving an electronic payment also must receive remittance advice information to establish which bills are being paid and how much is being paid on each.

CHAPTER 2

ELECTRONIC FUNDS TRANSFER PAYMENT OPTIONS

To obtain the full benefits from using EFT to pay transportation vendors, DFAS-IN needs to develop an operating concept that uses industry standards for EFT, accommodates sufficient remittance advice, interfaces with EDI, and attracts as many trading partners as possible.

PAYMENT AND REMITTANCE ADVICE

The DFAS-IN has two methods available for both paying vendors and providing remittance advice. It can make payments using traditional checks, or it can make payments electronically using public standards maintained by the National Automated Clearing House Association (NACHA) or the American National Standards Institute (ANSI). It can provide remittance advice by the same methods: paper or electronic.

Since many of DFAS-IN's vendors are small transportation businesses without the capability to execute EFT, we believe that DFAS-IN will need to continue to pay by paper checks accompanied by paper voucher stubs for the foreseeable future. Many vendors also do not do enough business with DFAS-IN to justify EFT.

Further, for electronic payments, we believe that DFAS-IN should select a payment method that includes payment information and remittance information in a single transaction. This approach would relieve its trading partners of the cumbersome job of matching separate transactions that arrive at different times.

EFT PAYMENT OPTIONS

The DFAS-IN has four options for executing electronic payments: an EDI standard and three EFT standards.

The EDI standard, developed by ANSI's Accredited Standards Committee (ASC) X12, has the capability to transmit both payment information and remittance advice. It is referred to as ANSI 820A, Payment Order/Remittance Advice.

The three EFT standards were developed by NACHA, which is comprised of mostly banking industry affiliates and governs the technical, operational, and legal framework necessary to support a national automated payment exchange system. Those standards are the Cash Concentration or Disbursement with Special Addendum (CCD+), Corporate Trade Payment (CTP), and Corporate Trade Exchange (CTX).

Payment Order/Remittance Advice

The ASC X12 developed the ANSI 820A standard in response to a demand from industry for a payment exchange standard that meets EDI syntax requirements. It permits corporations to instruct financial institutions to transfer payments and to exchange information directly between trading partner's accounts-payable and accounts-receivable systems.

The ANSI 820A standard has three primary advantages over the NACHA payment options. It uses a variable length format that is more efficient than the fixed length formats of the NACHA standards; it is supported by an industry of translation software vendors providing "off-the-shelf" capability to translate user application information into the EDI format; and it satisfies a DoD priority to expand the use of EDI.

The primary shortcoming of the EDI payment option is that it is not supported by the Automated Clearing House (ACH) network. As a result, it cannot use the Federal Reserve payment exchange system regulated by NACHA. For that reason, we believe that DFAS-IN should not use the ANSI 820A as its preferred payment option for EFT.

Since many corporations expressed interest in using both the ACH payment network and the highly efficient ANSI format, NACHA and ASC X12 joined forces in 1985 to develop techniques for information formatted in accordance with the ANSI 820A standard to flow through the ACH. As a result, two of the NACHA payment options, CCD+ and CTX, have an EDI-compatible addendum record.

Cash Concentration or Disbursement with Special Addendum

The CCD+ was the first widely used format for electronically transferring payments. In 1974, the Department of the Treasury began using CCD+ in several

direct-deposit programs, including social security, payroll, pension, annuity, and dividend payments.

In its original form, CCD+ permitted the transfer of payment-related information only. In recognition of the need to concurrently transmit payment and remittance advice, NACHA approved the addition of an addendum record holding up to 80 characters of remittance advice in the ANSI 820A format.

Although CCD+ is now the most widely used EFT payment option, it can accommodate only a limited amount of remittance advice. Consequently, if a payment is made to a vendor that covers more than one invoice or a number of adjustments to the payment, the CCD+ format cannot transmit the necessary remittance advice.

Corporate Trade Payment

As a result of the inability of the CCD+ addendum record to accommodate multiple invoices, representatives from 11 corporations developed the CTP format in the early 1980s. That format provides a separate addendum record for each invoice being paid, with a maximum of 4,999 detail records. Although supported by the ACH network, CTP cannot accommodate information in the ANSI 820A format and few banks support it.

Corporate Trade Exchange

Initially used in January 1987, the CTX incorporates some of the advantages of the CCD+ in that it accommodates remittance advice in the ANSI 820A format and uses the ACH network. Like the CTP, it also accommodates multiple invoices by permitting up to 4,999 addenda records.

Unfortunately, few banks have the capability to process CTX formats. Based upon a 1991 NACHA estimate, only 100 financial institutions currently have the capability to originate and receive CTX transactions. Because the number of institutions with CTX capability is conservatively expected to grow by 30 percent per year, we believe that CTX will ultimately be the most widely used payment option.

EXISTING ENVIRONMENT

The DFAS-IN currently disburses approximately 235,000 payments annually to three different groups of vendors. Approximately 38 percent of the payments are to

one-time vendors. Most of the Government bills of lading (GBLs), meal tickets, and Government Travel Requests (GTRs) from small vendors fall into this category. As a result, it is not feasible for DFAS-IN to develop EFT relationships with these vendors; they should continue to be paid by check.

Another 40 percent (approximately 94,000 payments) are disbursed to repeat vendors that submit invoices for single GBLs or GTRs. These payments are excellent candidates for EFT; they also require minimal remittance advice to electronically accompany the payment. Although the ANSI 820A, CCD+, CTP, and CTX payment options would all accommodate these payments, only the CCD+ and the CTX are EDI compatible and use the ACH network.

The third group consists of large repeat vendors. They usually submit several GBLs or GTRs under one public voucher; they also frequently submit multiple vouchers each day. While these vendors are responsible for most of the shipments, they account for only 22 percent of the payments, approximately 52,000 annually, primarily because of the efficient consolidation capability of DFAS-IN's D&R system. These payments are good candidates for EFT, but they require a standard that can accommodate a large amount of remittance advice. The CTX is the only payment option that is EDI compatible and can support this type of payment.

SUMMARY

Although the CTX is the most technically advanced payment option, it is 3 to 5 years away from being widely supported by banks. Nevertheless, we recommend that DFAS-IN use this payment option whenever possible. When a trading partner's bank cannot accommodate the CTX option, we recommend that DFAS-IN use the CCD+ to electronically make payments. These two formats (CTX and CCD+) have advantages over other payment options. They are supported by the widely used ACH EFT payment network operated by the Federal Reserve System. They also accommodate ANSI X12 820A remittance advice information permitting the use of the more efficient variable length format indicative of EDI, the support of an industry of EDI translation software vendors, and the expansion of EDI within DoD. We estimate that approximately 45 percent of the annual payments can be made initially using those two formats, increasing to 60 percent as more banks adopt the CTX. Finally, a significant volume of DFAS-IN's payment and remittance advice

transactions must continue to use paper because of the large number of small, one-time providers of transportation services.

CHAPTER 3

ELECTRONIC FUNDS TRANSFER SYSTEMS DESIGN

To accommodate EFT, DFAS-IN's disbursement system needs to possess three specific capabilities. It should select the appropriate payment option for each invoice based on the preference of the trading partner, the number of invoices, and the existence of adjustments to the payment. Once the format is identified, it should create the appropriate payment transactions. Finally, it should send all EFT transactions through the Federal Reserve's communications network.

SELECTING THE EFT PAYMENT OPTION

The payment option depends exclusively upon the preference of the trading partner. The disbursement system should reference a trading partner profile that specifies the choice of each vendor. If the trading partner profile indicates paper or is otherwise blank, then DFAS-IN should issue a check accompanied by paper remittance advice.

If CCD+ is the preferred method of payment, then the disbursement system should verify that either the payment does not include multiple invoices or the billed amount is not adjusted. (The 80 characters of space provided by the format addendum record can only accommodate basic remittance information.) If these conditions are not satisfied, then the system must pay the invoices by check.

If a trading partner chooses CTX, then that payment option can accommodate all remittance advice information including consolidated invoices and billing adjustments.

GENERATING EFT TRANSACTIONS

As discussed previously, the addendum records of both the CCD+ and CTX formats can accommodate the ANSI 820A transaction set, which provides both payment and remittance information. Since the ANSI 820A must be created to satisfy the payment information requirements of the General Services Administration (which has audit responsibility for all Government transportation bills) and Military

Traffic Management Command (which is DoD's traffic manager), that information should be added to both the CCD+ and CTX payment options.

We believe that the Remittance Detail, Reference Number, and Date data segments of the ANSI 820A transaction set will satisfy the CCD+ requirements for a single invoice, while the entire ANSI 820A can be inserted into the CTX format. To accommodate these additions, DFAS-IN should use the TIPS EDI translator to convert payment information into the ANSI 820A format before creating EFT transactions.

USING THE FEDERAL RESERVE COMMUNICATIONS NETWORK

Once EFT transactions have been generated, they need to be sent to the ACH network to effect the transfer of funds. This network, operated primarily by the Federal Reserve System, is used to move funds among U.S. banks.

The DFAS-IN can enter this network through either the Federal Reserve System or a commercial bank. Since the cost of using the Federal Reserve System (including communications) is only $0.02 per transaction, compared with bank charges ranging from $0.20 to more than $1.00, we suggest that DFAS-IN enter the network through the Federal Reserve System.

The DFAS-IN can access the Federal Reserve System through two Federal communications software packages: Vendor Express, sponsored by the Treasury Department; and FEDLINE2, sponsored by the Federal Reserve System. We suggest that DFAS-IN use FEDLINE2 for a number of reasons. It offers superior technical support and software maintenance and is available under interagency support arrangements. It possesses a telecommunications capability and offers appropriate security and traceability of EFT transactions. FEDLINE2 can be used in two different ways: it can receive batch files of EFT transactions and it can generate EFT transactions on line. We believe that the batch processing capability of FEDLINE2 best meets DFAS-IN's requirements. All EFT transactions for a given day should be grouped into a formatted batch (or batches) and passed to the FEDLINE2 software package for communication to the Federal Reserve System and the ACH network.

The DFAS-IN can communicate with the Federal Reserve System's Indianapolis Branch either by telephone or by accessing direct lines. We believe that use of a telephone offers DFAS-IN several advantages. It is both simple and easily

controlled, and, when combined with the operating procedures described in the next chapter, it is well suited for the relatively low volume of EFT transactions (approximately 600 per day) projected for DFAS-IN.

SUMMARY

To satisfy DFAS-IN's operating requirements, an EFT disbursement system should reference a trading partner profile containing the payment option choice of each trading partner; it should use the payment information generated by the EDI translator to create NACHA transactions; and it should transmit EFT transactions to the Federal Reserve System over normal telephone lines using the FEDLINE2 software package, which is available from the Federal Reserve System.

CHAPTER 4

IMPLEMENTING ELECTRONIC FUNDS TRANSFER

The use of EFT to pay transportation vendors is a new initiative for DFAS-IN. In this chapter, we lay out a number of actions that DFAS-IN needs to take as it implements EFT. Those actions include appointing an EFT coordinator, developing a trading-partner administration plan, formulating day-to-day operating procedures, and preparing a security plan.

APPOINT AN EFT COORDINATOR

Expertise is the key to successfully implementing an EFT capability. We propose that DFAS-IN appoint an EFT coordinator to serve as its in-house expert. As the single point of contact for electronic payment issues, the EFT coordinator should understand how remittance advice information complements EDI, ensure that ANSI standards are used to format the information that accompanies NACHA-formatted electronic payments, and work with DFAS-IN's EDI counterpart. DFAS-IN may even consider having the same person perform both the EFT and EDI coordinating functions.

The EFT coordinator should work closely with NACHA, which sets the rules and formats that govern the use of EFT through automated clearing houses, and the Indiana Exchange, Incorporated, the local automated clearing house association in Indianapolis. Both NACHA and the Indiana Exchange are available to assist DFAS-IN personnel and to answer any questions on the use of EFT.

Finally, the EFT coordinator should develop the plans and procedures necessary to conduct EFT effectively, to include a trading-partner administration plan, day-to-day operating procedures, and a security plan. The remainder of this chapter discusses development of these plans and procedures.

DEVELOP TRADING-PARTNER ADMINISTRATION PLAN

The logistics of coordinating EFT activities with several hundred transportation vendors is a formidable task. The EFT coordinator will need to promote

electronic payments, enroll new trading partners, and monitor the status of all EFT trading-partner agreements. The process of promoting the use of EFT and of enrolling new organizations should start months before the first funds are actually transferred and continue for several years. Monitoring the status of trading-partner agreements will be a continuous task.

To manage this process, the EFT coordinator needs to develop a trading-partner administration plan. The plan should have three components: a strategy for vendor participation, an EFT information package for vendors, and a trading-partner agreement.

Strategy for Vendor Participation

The vendor participation strategy should promote the use of EFT as an alternative to paper checks, set goals and priorities for new trading partners, and establish procedures for enrolling new trading partners and subsequently administering their activities.

In developing this strategy, the EFT coordinator should recognize that not all transportation companies have the same requirements and levels of knowledge. We believe that DFAS-IN should target for early enrollment in its EFT program the large- and mid-sized freight transportation companies that bill for services on a daily basis. They have the most experience in EDI and are most likely to be able to receive EDI-compatible NACHA formats. For the first few months, DFAS-IN should enroll no more than 10 to 20 companies as it finalizes its operating procedures. During the first year of operation, DFAS-IN should target approximately 20 percent of the large- and mid-sized companies for enrollment, focusing on companies already using EDI to communicate with DFAS-IN.

The DFAS-IN EFT coordinator should maintain a portfolio on all trading partners, containing such information as the preferred payment method (either by check or one of the EFT formats) and current account and address. That information should be combined with similar information maintained on vendors using EDI. All information should be verified at least once a year.

EFT Information Package

In promoting EFT to transportation companies, the EFT coordinator should prepare an information package that enumerates the benefits of EFT, describes the

procedures for receiving EFT payments, and explains the relationships that vendors need to establish with their bank. That package also should contain a copy of the EFT trading-partner agreement.

EFT Trading-Partner Agreement

An EFT trading-partner agreement serves two purposes. First, it sets the ground rules by which the two parties (DFAS-IN and the transportation company) will conduct business in a paperless environment; second, it records the information necessary to make payments using EFT. In a separate report, we present a proposed agreement covering both EDI and EFT.[1]

Before sending the first electronic payment to a particular trading partner, DFAS-IN should use a process known as "prenotification" to verify that all account information is correct. A prenotification consists of forwarding an EFT transaction for zero dollars to the vendor's bank account prior to transferring any funds. That practice will surface any problems prior to the first "live" payment. NACHA rules explain the prenotification process in more detail.

FORMULATE OPERATING PROCEDURES

The second element that needs to be considered in implementing an EFT capability is the day-to-day operating procedures. DFAS-IN needs to develop procedures for system operations and organizational roles and responsibilities. It also needs to train its personnel on the use of those procedures before it enrolls trading partners.

System Operating Procedures

System operating procedures should build upon users manuals prepared by the developers of the EFT disbursing system. Those manuals should include screen-by-screen operation of the disbursing subsystem and FEDLINE2 software. They also should specify the communications medium and control mechanisms that will link the disbursing system and the FEDLINE2 package and those that will link the disbursing subsystem and other DFAS-IN systems. To aid in the development of those operating procedures, we provide an overview of EFT in an appendix.

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[1]LMI Report MT901TR1, *EDI Trading Partner Agreement for Defense Transportation*, Benjamin W. Milbrandt and John A. Ciucci, January 1990.

Prompt Payment

The use of EFT changes the timing of payments. Under the Prompt Payment Act, the Government must pay all its bills within 30 days or incur an interest penalty. Payments by check are considered on time if they are dated on or before the thirtieth day. For electronic payments, the funds must be in the payee's account on or before the thirtieth day. Since it takes 2 days for most EFT transactions to reach the seller's bank account, DFAS-IN will need to pay its bills earlier by EFT than by check.

This change in payment timing should be easy for DFAS-IN to accommodate because TIPS will provide the capability to authorize a payment within 7 days of receipt of invoice. Once authorized, payment data should be stored until needed by the disbursing subsystem to process an on-time payment.

PREPARE SECURITY PLAN

Security is one of the principal concerns in the design and operation of any financial system, particularly a disbursing system. The EFT coordinator needs to develop a security plan that addresses both internal controls and external security.

Internal Controls

The use of electronic payments does not eliminate the need for internal controls to prevent or detect mistakes and fraud. As for any payment function, adequate procedures must be in place to guarantee that only authorized payments are made. In addition to the usual invoice review and certification process, DFAS-IN needs to establish access controls for the computer programs that produce and send EFT transactions. Those controls are the equivalent to overseeing the use of paper checks and limiting signature authority.

We believe that DFAS-IN should use a separate microcomputer, located in a room with controlled entry, to send EFT transactions to the Federal Reserve System. Although access to specific routines in a mainframe computer can be limited by using password and authorized terminals, a separate machine with limited physical access and a small number of users is a much simpler and more effective method. DFAS-IN should require that at least two employees be used to formulate and send EFT transactions. It also should use internal control procedures similar to those

governing communications with DFAS-IN's check-generating systems in transferring data, using either tape or disk, to the EFT microcomputer.

External Security

Just as paper checks may be lost or stolen in the mail, EFT is subject to interruption of service, altered transactions, or "forged" transactions. Unlike the mail, however, these risks can be reduced or eliminated for EFT through the use of proper security procedures.

The EFT coordinator should establish operational and electronic security procedures for EFT. Operational security procedures focus on people and include scheduling transmissions, preparing daily reconciliations, having backup communications available, and, oftentimes, using voice-recognition techniques. Electronic security procedures involve authentication and sometimes encryption.

Operational Security Procedures

We believe that, as a minimum, DFAS-IN's operational security procedures should consist of the following:

- *Scheduled transmissions.* By conducting a limited number of "batched" funds transfers each work day, DFAS-IN will minimize the risk of someone initiating a false transaction. If such a transaction is introduced, it can be readily identified – before the ACH network actually transfers funds. Also, missing scheduled transmissions will serve as a flag to the Federal Reserve System that it should contact DFAS-IN to identify the cause.

- *Daily reconciliation.* DFAS-IN should serialize each EFT transaction and total each group of transactions. That practice will identify missing or altered transactions and ensure that neither extra nor duplicate serial numbers are used.

- *Backup communications.* DFAS-IN should develop a set of backup communications plans to ensure that it pays its bills on time. Those plans might involve the use of a different branch bank of the Federal Reserve System if the primary branch is off line or delivery of a tape or disk if telephone service is broken.

- *Voice recognition.* Although DFAS-IN can conduct business transactions electronically with the Federal Reserve System without human intervention, many firms have found that having staff members talk to bank personnel prior to transferring data adds a degree of security. DFAS-IN should have a designated staff member place a telephone call to a point of

contact at the Federal Reserve Bank before communicating EFT transactions.

Electronic Security Measures

Electronic security measures can provide a level of assurance that external communications are unaltered, confidential, and initiated by DFAS-IN. Such measures include the following:

- *Message authentication.* This process protects the integrity of an electronic message. Some (or all) data elements in the message are processed through an authentication device to produce a unique message authentication code (MAC) that is then appended to the message. The receiver of the message passes the same data fields through a similar device to generate its own MAC, and the two codes are compared. Any change in the contents of authenticated data will change the second MAC, causing the message to be rejected because it has been altered. Both the sender and the receiver of the message must use the same key, consisting of a set of numbers, for proper authentication.

- *Encryption.* Encryption is the process of encoding all (or parts) of a transmission to protect its confidentiality. Like message authentication, both the sender and receiver must have the same key for encrypting and decrypting (decoding) the message.

Because DoD Directive 7360.10, *Disbursing Policies*, 17 January 1989, requires DoD Components to use message authentication for EFT and the Federal Reserve System routinely uses encryption of EFT transactions, DFAS-IN should plan to embed both measures into its EFT system. Those measures, however, are not a substitute for proper internal controls; they can only guarantee that internally generated transfers are accomplished, but not generated correctly.

SUMMARY

This chapter identifies a number of actions that DFAS-IN needs to take as it implements EFT for transportation vendor payments. They include appointing an EFT coordinator, developing a trading-partner administration plan, formulating day-to-day operating procedures, and generating a security plan. In the following chapter, we propose that DFAS-IN develop a prototype EFT capability and lay out a plan for implementing it.

CHAPTER 5

A PROTOTYPE EFT SYSTEM

The modernization of DFAS-IN's transportation payments operations is scheduled to continue through early 1993, with an EFT capability planned for the final increment of TIPS. Such scheduling is necessary to ensure the coordinated development of all disbursing, accounting, and reporting functions necessary to conduct EFT transactions and to minimize disruptions to current operations.

In the interim, however, we recommend that DFAS-IN develop a prototype EFT system. Such a system would provide DFAS-IN personnel with valuable experience on EFT operations, making TIPS design and development simpler and more straightforward. The prototype system would provide experience in the following areas:

- Use of NACHA EFT formats
- Development of interface software between EDI and EFT
- Use of Federal Reserve System and ACH network processes
- Development and use of security controls
- Administration of trading-partner arrangements
- Use of EFT telecommunications
- Use of FEDLINE2 software.

The prototype system would give DFAS-IN an operational capability to replace some paper checks, thereby saving labor and demonstrating its commitment to EFT. It also would permit DFAS-IN to divorce EFT from other disbursing functions while TIPS is being developed, ultimately becoming an interim production system. Finally, the EFT prototype would stimulate the use of EFT in other payment applications at DFAS-IN.

PROTOTYPE DESCRIPTION

To gain the benefits of a prototype EFT system, we believe that DFAS-IN should build upon its existing transportation payment system and the EDI prototype

already in place. The current operations are depicted in Figure 5-1; the proposed EFT prototype operation flow is shown in Figure 5-2.

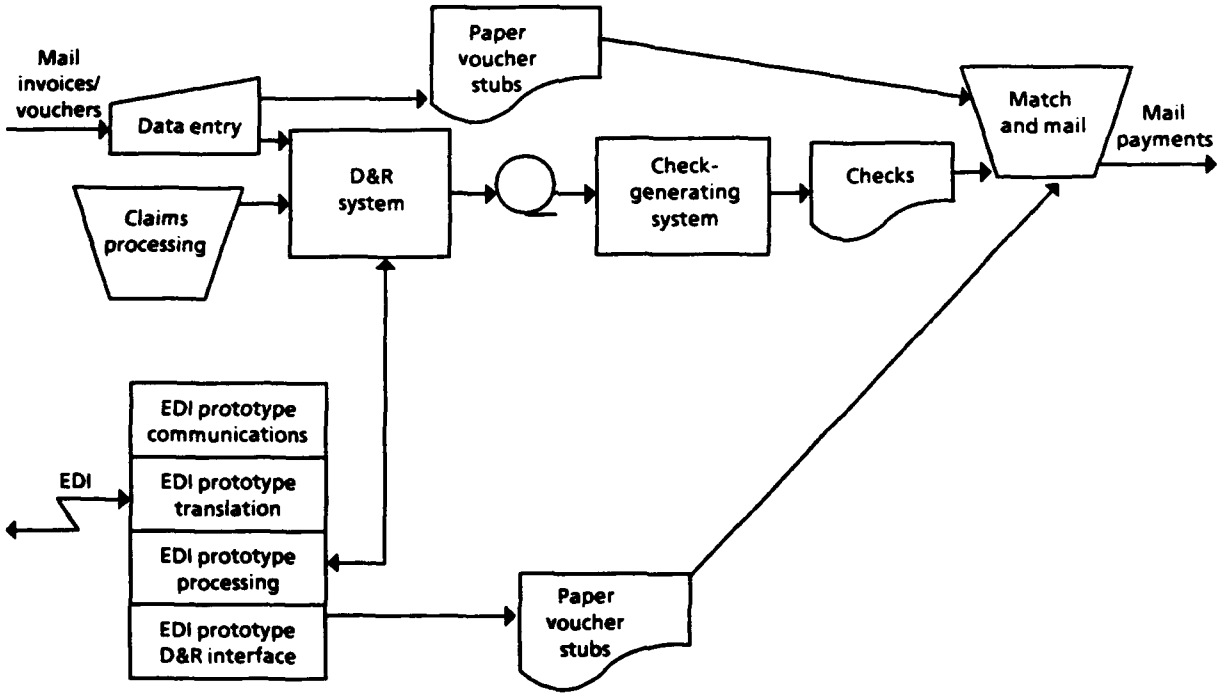


FIG. 5-1. CURRENT DFAS-IN TRANSPORTATION OPERATIONS (D&R system and EDI prototype)

In the prototype EFT system, the processing of payment information prior to the D&R system should remain unchanged. However, the D&R system should be modified to create two new lists: vendors to be paid by check and those to be paid by EFT. For vendors being paid by check, the same process should be followed. For vendors being paid by EFT, the D&R system should be modified to combine remittance advice and payment information and then send it to the EDI prototype. All accounting and reporting functions should continue to be performed by the D&R system.

Upon receipt of payment and remittance information from the D&R system, the EDI prototype should add trading-partner profile information (address, bank account, payment format requirements); generate, using EDI translation software, formatted ANSI 820A transactions; and then pass the transactions to the EFT disbursing prototype.

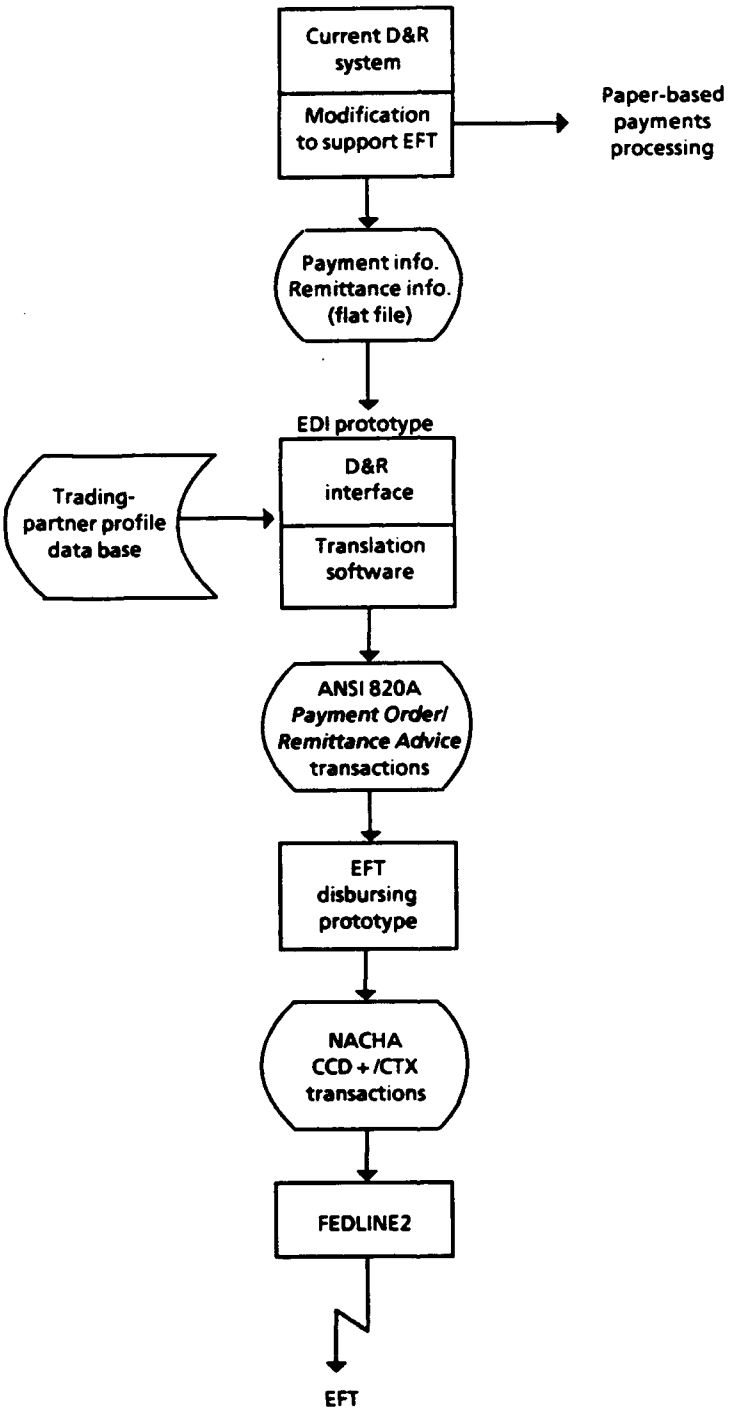


FIG. 5-2. EFT PROTOTYPE OPERATION FLOW
(Using EDI prototype)

The EFT disbursing prototype should "read" the transactions to determine payment format (CCD+ or CTX) for each vendor. (The payment portion of an EDI ANSI 820A transaction set maps directly into the payment portion of both the CCD+ and CTX formats.) Since the CCD+ format contains a single 80-character addendum, it can only be used for single invoice payments. All trading partners using CCD+ and having multiple invoices must receive payment by mail. CTX-formatted EFT transactions do not have that limitation because they contain complete EDI ANSI 820A transaction sets in their addenda.

IMPLEMENTATION PLAN

In the previous section, we described some of the operations of a prototype EFT system; now we outline the actions that DFAS-IN would need to take to implement the prototype and a schedule for accomplishing them.

Assign EFT Coordinator

The first step in the development of the prototype is to assign an EFT coordinator to lead the development effort and to coordinate with outside organizations that will either support the development of, or participate in, EFT operations.

Refine Operating Concept

The EFT coordinator, drawing from various organizations within DFAS-IN, should form an EFT prototype development team. That team should refine the EFT operating concept and assign subsystem interfaces and development responsibilities. Once the operating concept has been approved, most system development actions can proceed in parallel.

Coordinate with the Federal Reserve System

The EFT coordinator should develop a close working relationship with the Federal Reserve System. One of the first actions should be to obtain FEDLINE2 software. Throughout the prototype development, the EFT coordinator should consult regularly with the Federal Reserve System to plan for operations, establish communications, and perform EFT.

Develop Prototype Software

Following refinement of the operating concept, the organizations responsible for developing the necessary software should develop subsystem specifications. As depicted in Figure 5-2, DFAS-IN would need to modify the D&R system and the EDI prototype's D&R interface program, EDI trading-partner profile data base, and EDI translation software. DFAS-IN also would need to develop EFT prototype disbursing software.

Develop Prototype Procedures

Once the operating concept has been established, the EFT coordinator should develop procedures for using the EFT prototype; those procedures should include preparation of a security plan and assignment of operational responsibilities.

Train Personnel

In conjunction with development of system operating procedures and software, the EFT coordinator should oversee development of training plans for use immediately prior to testing the prototype system in parallel with current practices.

Enroll Trading Partners

The DFAS-IN EFT coordinator should undertake three separate initiatives related to trading-partner participation in the EFT prototype. First, the EFT coordinator should develop a prototype trading-partner administration plan, outlining enrollment and trading-partner administration procedures and targeting specific vendors for participation.

Second, the EFT coordinator should produce an EFT information package for vendors to explain the prototype and the actions required of a vendor who wishes to participate. The package should include a conventions document on the use of the ANSI 820A transaction set for vendors receiving remittance advice by EFT.

Finally, the EFT coordinator should enroll vendors, ensuring that the CCD+ and CTX formats are used and various types of vendors from the freight, household goods, and travel industries participate.

Conduct Parallel Operations

When all of the preceding actions are completed, DFAS-IN should test the prototype EFT system in parallel with current operations. As part of that test, DFAS-IN should use all payment and remittance advice format combinations. Each combination should be tested with several vendors, verifying all transactions against the data in the D&R system.

Figure 5-3 proposes a schedule for accomplishing each of these actions.

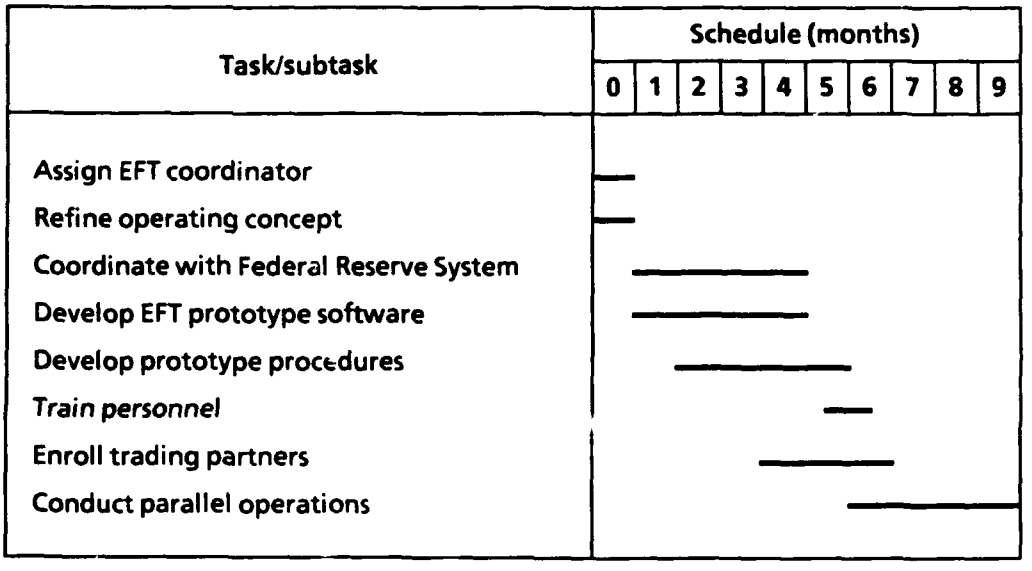


FIG. 5-3. IMPLEMENTATION SCHEDULE: EFT PROTOTYPE

APPENDIX

FUNDAMENTALS OF ELECTRONIC FUNDS TRANSFER

This appendix describes the differences between paper-based payments and electronic funds transfer (EFT).

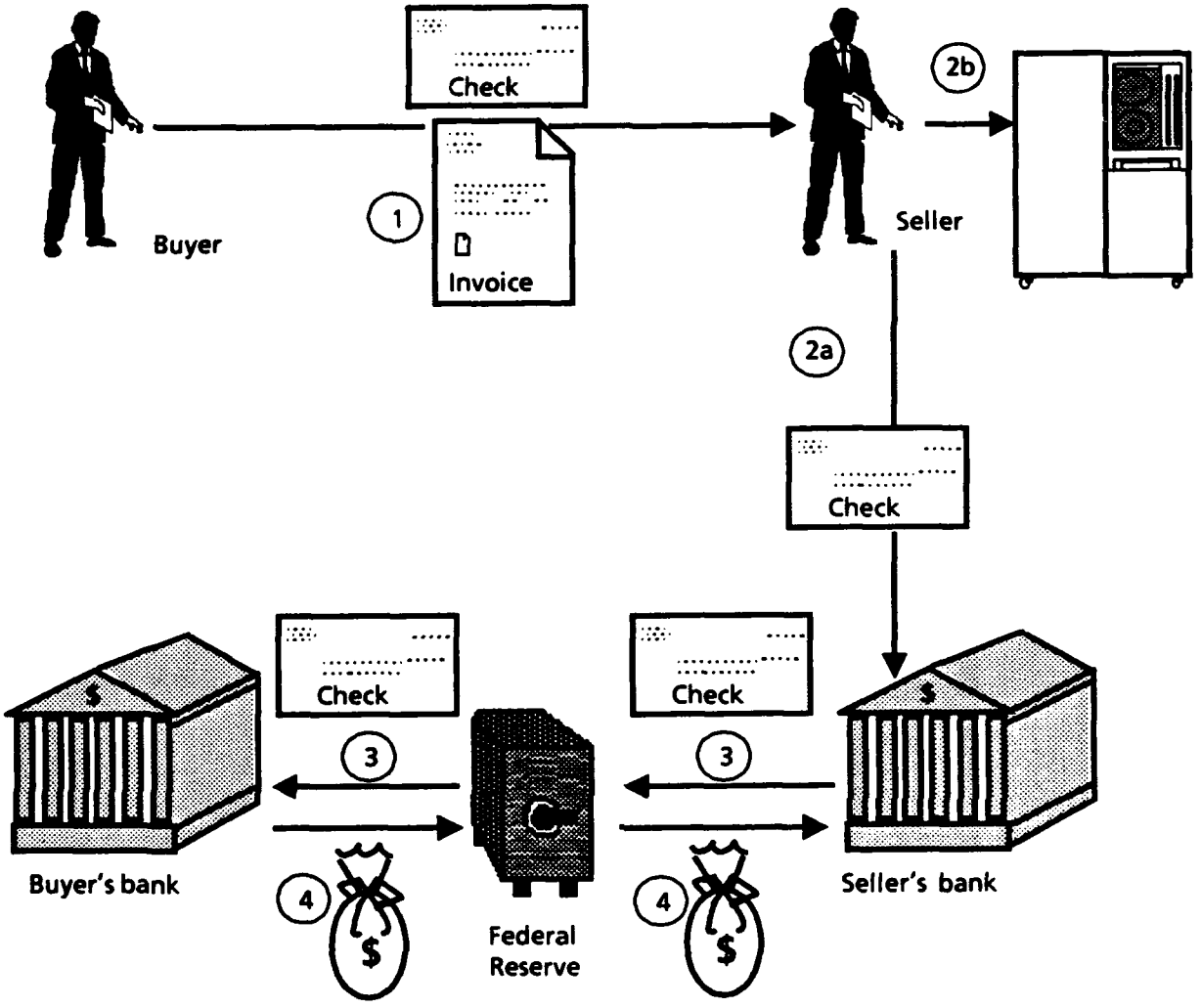
PAPER-BASED PAYMENTS

In the traditional, paper-based method of payments, the buyer of goods or services (payer) mails the check and the necessary remittance advice to explain it (e.g., purchase order or invoice number) to the seller (payee). The seller receives the payment in a few days, deposits the check, and updates its books. The check frequently takes several days to clear, after which the associated funds are available for the seller's use. Figure A-1 illustrates this process.

A variation of the traditional payment method is the use of a "lockbox" by the seller (see Figure A-2). The seller pays a fee for a bank to receive and process its inbound payments. Since payments are mailed directly to the bank – and deposited immediately – funds are available for the seller's use several days sooner than if the seller had first processed the check. The bank may also process the remittance advice that accompanies the check, or it may simply forward that information to the seller. The lockbox method is often used by firms that either manage their cash balances intensely or receive large numbers of payments.

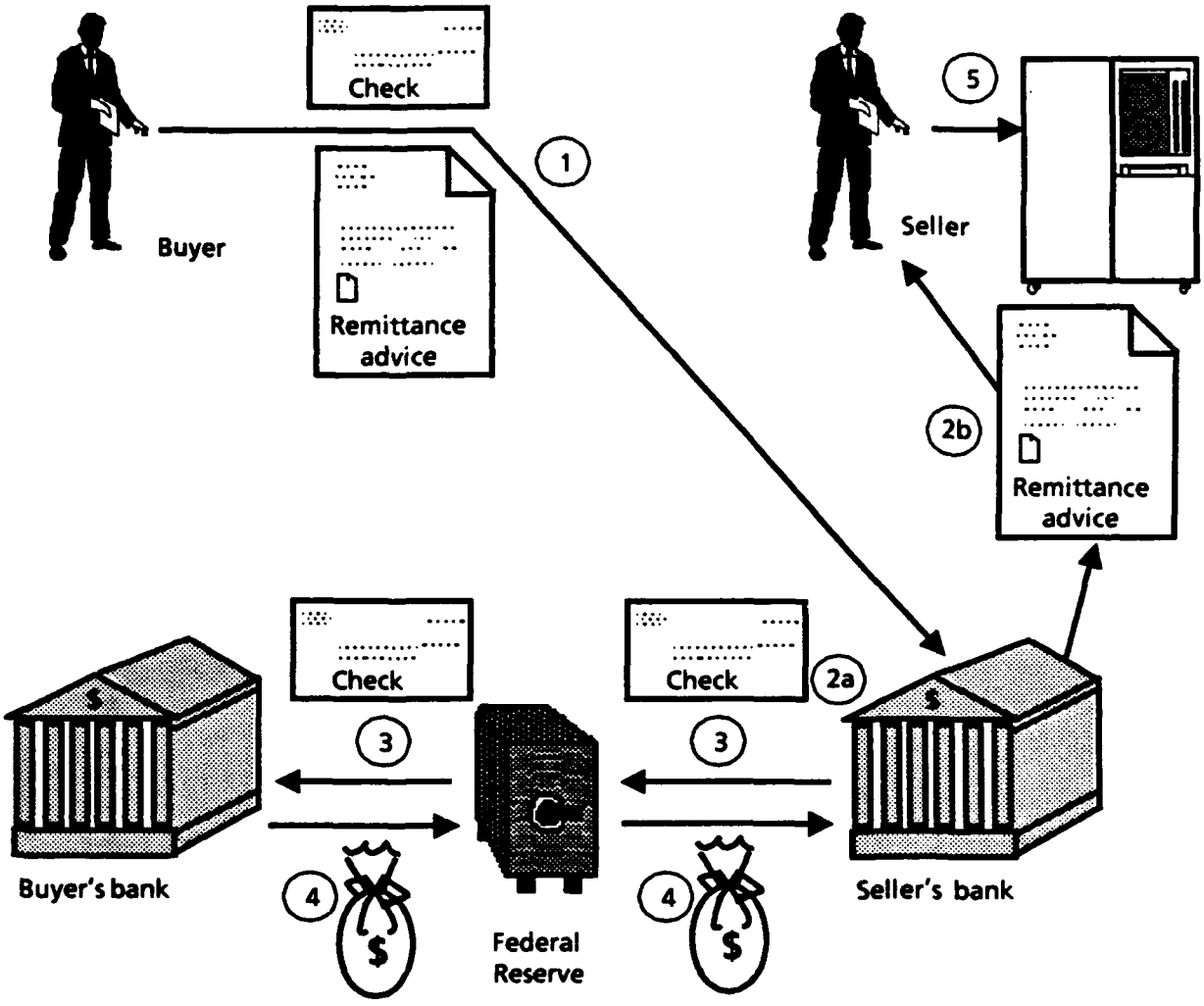
ELECTRONIC FUNDS TRANSFER

Electronic funds transfer is a generic term for the movement of funds from the bank account of one party to that of another without the use of paper. As such, it covers such diverse mechanisms as interbank wire transfers, transactions through automated teller machines, and "direct deposit." It also includes a family of



1	Check and remittance advice mailed by buyer to seller	1 – 5 days
2a	Seller deposits check	1 – 2 days
2b	Seller enters remittance information into its accounts receivable system	1 – 3 days
3	Check clears through Federal Reserve	3 – 5 days
4	Funds available for seller's use; buyer's bank account debited	

FIG. A-1. PAYMENT AND REMITTANCE FLOWS: TRADITIONAL METHOD



1	Check and remittance advice mailed by buyer to seller's lockbox at seller's bank	1 – 5 days
2a	Bank deposits check	Same day
2b	Forwards remittance advice to seller (either mails hard copy or electronic transmission)	0 – 2 days
3	Check clears through Federal Reserve	3 – 5 days
4	Funds available for seller's use; buyer's bank account debited	
5	Seller enters remittance advice into accounts receivable system	1 – 3 days

FIG. A-2. PAYMENT AND REMITTANCE FLOWS: LOCKBOX METHOD

transactions called Automated Clearing House (ACH) corporate payments.[1] We use the terms EFT, electronic payment, and EFT payment interchangeably throughout this appendix.

In its simplest form, an EFT payment replaces only the paper check, with remittance or advice mailed separately to the seller. The actual funds transfer involves several steps:[2]

- The buyer notifies its bank to initiate the transfer.
- The buyer's bank checks the notification to verify that it is both legitimate (authorized) and correctly formatted.
- The bank calculates a settlement date for the transaction (generally 2 days to allow for batch processing through the ACH network).
- The bank transfers the funds from the buyer's account to its own.
- The bank forwards the transfer to a local ACH, generally a branch of the appropriate Federal Reserve Bank.
- The local ACH reviews each transaction to determine whether it is for a bank serviced by itself or for a bank serviced by another local association; the transaction is then routed accordingly.
- The ACH transfers the funds from the account of the buyer's bank to that of the seller's bank.
- The ACH forwards the transaction to the seller's bank.
- The seller's bank transfers the funds from its own account to that of the seller and then notifies the seller by whatever means the two parties have agreed to.

The total elapsed time from when the buyer notifies its bank to accomplish a payment to the deposit of funds in the seller's bank account is 1 to 2 days. This compares favorably with the 5 to 10 days necessary for a paper check to be mailed,

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[1]Automated clearing houses provide both the mechanism and the rules by which certain types of EFT are originated at one financial institution and routed through one or more clearinghouses to a receiving financial institution. Most clearinghouses are operated by the Federal Reserve System. Both local and national organizations provide the procedures that standardize the process. The national organization – National Automated Clearing House Association (NACHA) – together with the Federal Reserve System and the Department of the Treasury, establish the rules by which the ACH network operates.

[2]For a more complete and detailed discussion, see NACHA's ACH rules, *NACHA Operating Rules*, National Automated Clearing House Association, current edition, published annually.

processed, and cleared. To complete the transaction, the seller must receive and compare both the notification of the deposit by its bank and the remittance information mailed to it by the buyer (see Figure A-3).

For payments to vendors with an electronic data interchange (EDI) capability, the mailed remittance advice may be replaced with EDI remittance advice, as shown in Figure A-4.

Both of these methods of electronic payment have the disadvantage of separating the payment from the information detailing its purpose – the remittance advice. An alternative is to combine electronic remittance advice with the EFT. Several types of ACH corporate payment transactions permit this. Typically, the EFT payment and remittance advice would travel together in the same electronic "envelope" through the ACH to the seller's bank. The bank would deposit the payment in the seller's account and then forward the remittance advice to the seller (that process is illustrated in Figure A-5).

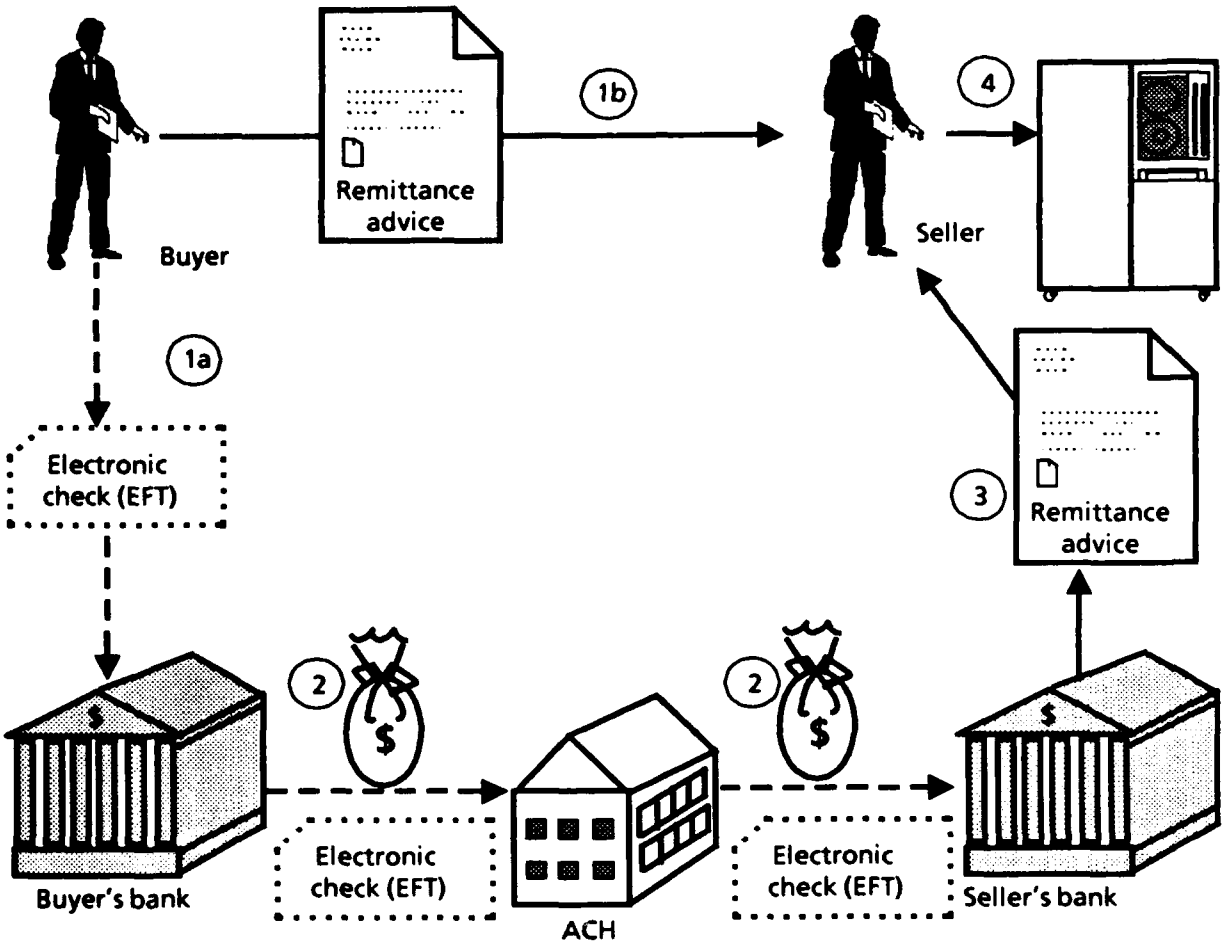
EFFECT ON BUSINESS RELATIONSHIPS

The use of EFT to pay vendors' bills changes the normal business relationship between the buyer and seller and between each party and its bank.

Buyer and Seller

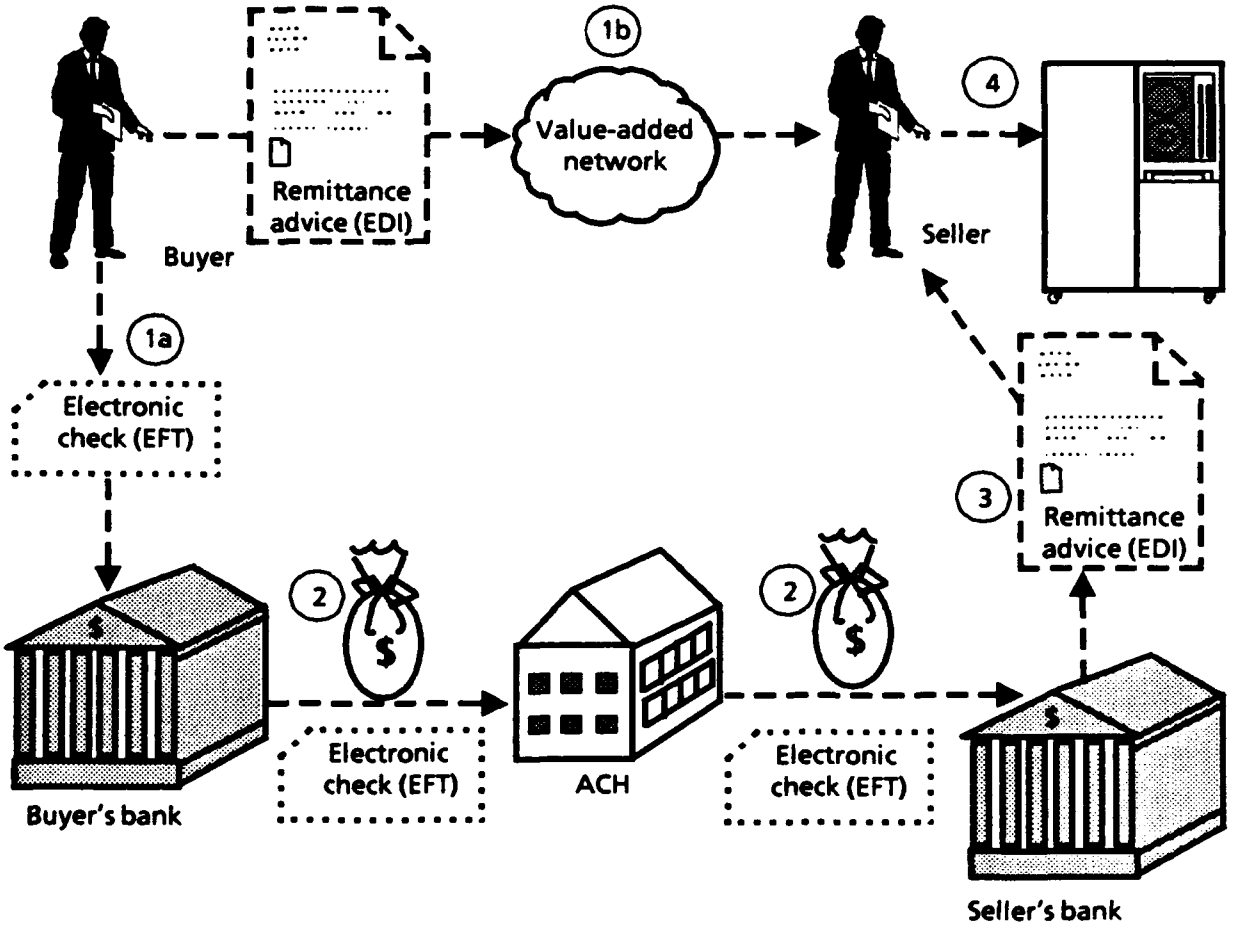
The most significant effect of EFT on the buyer/seller business relationship occurs in the areas of payment timing and administrative costs. EFT offers the ability to control each of these areas more effectively.

With electronic payments, the exact date the funds will be available is known. The "float" created by mailing and check-clearing time is greatly reduced, as is the uncertainty of both. Private-sector firms have approached this change in timing in a variety of ways. Some have renegotiated payment dates to make the average funds availability date for the seller equivalent to paper payments so that the buyer does not lose the use of the float. Others have split the difference; the buyer pays a few days later, but the seller still has earlier access to the funds. Still, other firms have elected not to change payment dates because they believe that the benefits of being able to predict bank balances precisely and of conducting business electronically are more valuable than lost float.



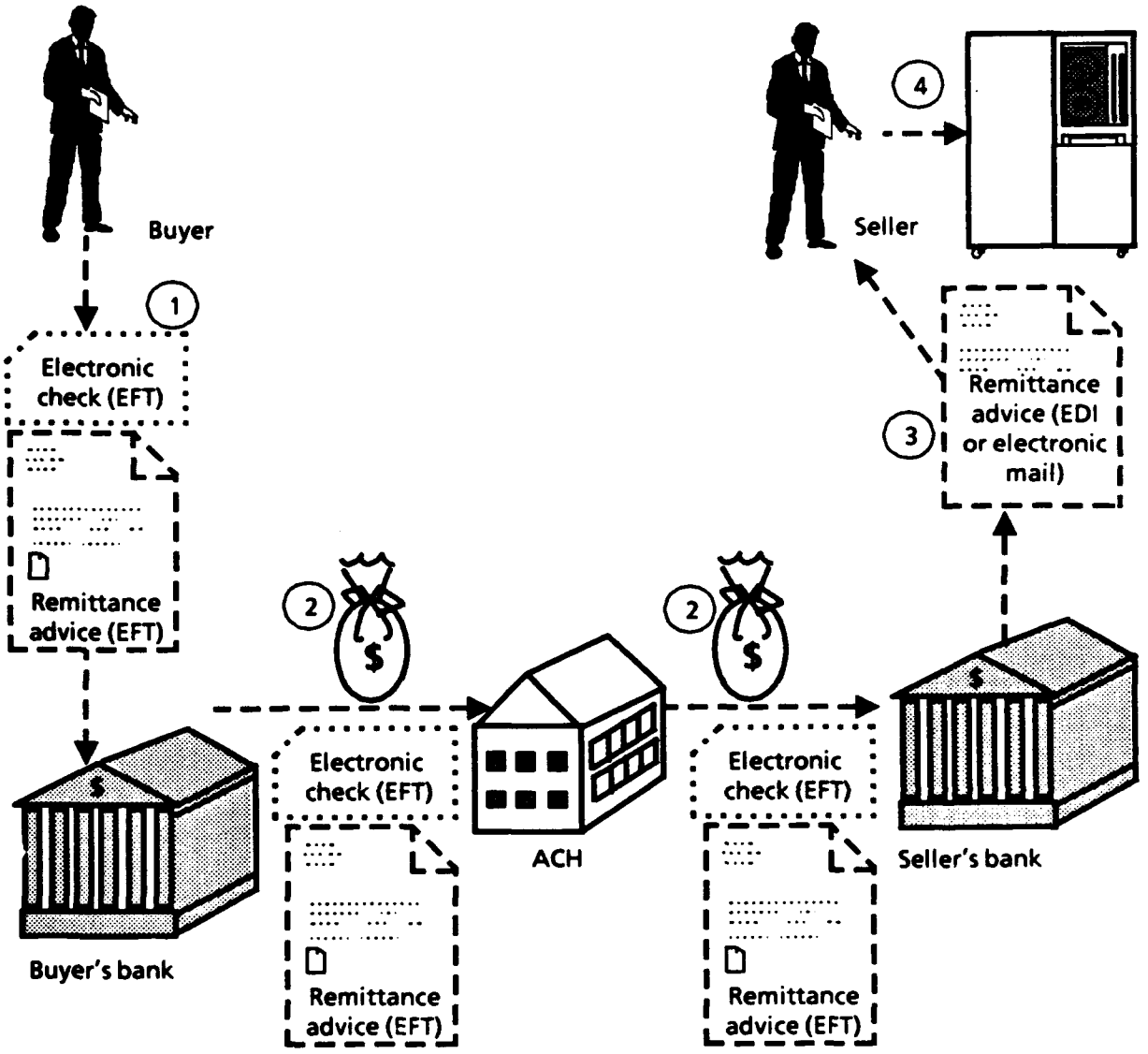
1a	Buyer sends EFT order to its bank	Same day
1b	Buyer mails remittance to seller (or seller's lockbox)	1 – 5 days
2	EFT (with funds) flows through ACH to seller's bank	1 – 2 days
3	Seller's bank notifies seller of deposit (minimal information)	0 – 30 days (negotiated)
4	Seller updates accounts receivable system and matches remittance advice and payment notification	1 – 3 days

FIG. A-3. PAYMENT AND REMITTANCE FLOWS: EFT WITH PAPER REMITTANCE



1a	Buyer sends EFT order to its bank	Same day
1b	Buyer sends remittance advice to seller electronically by third-party value-added network	Same day
2	EFT (with funds) flows through ACH to seller's bank	1 – 2 days
3	Seller's bank notifies seller of deposit	0 – 30 days (negotiated)
4	Seller updates accounts receivable system and matches remittance advice and payment information	1 – 3 days

FIG. A-4. PAYMENT AND REMITTANCE ADVICE FLOWS: EFT WITH EDI REMITTANCE



1	Buyer sends EFT order and related remittance information to its bank	Same day
2	EFT (with funds) flows through ACH to seller's bank	1 – 2 days
3	Seller's bank notifies seller of deposit and forwards remittance advice to seller	0 – 30 days (negotiated)
4	Seller updates accounts receivable system	1 – 3 days

FIG. A-5. PAYMENT AND REMITTANCE ADVICE FLOWS: EFT

The Department of the Treasury has endorsed electronic payments as benefiting the national economy and directed that the Government not recoup lost float for EFT payments. In fact, the Prompt Payment Act treatment of EFT results in even greater advantage to the seller because it defines when an EFT payment is accomplished as the date the payment is available in the seller's bank account. In contrast, the Government's prompt payment commitment for a check is met when the check is mailed.

The ability to control administrative costs also benefits both the buyer and the seller, although not equally. Both benefit from reduced risk of lost, stolen, or delayed checks, and the costs associated with resolving any problems. The buyer can reduce its check-preparation and mailing costs, although they may be offset somewhat by EFT (and EDI) transaction costs. The seller can greatly reduce its accounts receivable processing costs by receiving electronic remittance advice from its bank or a third-party EDI network, thereby eliminating the effort necessary to enter that information into its computer system and to correct the inevitable errors.

Buyer and Its Bank

When replacing the use of checks with payments by EFT, the buyer needs to arrange a new type of service with its bank. To initiate an electronic payment, as illustrated in Figures A-3 through A-5, a buyer notifies its bank rather than writing a check. The bank actually originates the payment. Prior to beginning EFT, the buyer and its bank need to agree on how they will operate. In most cases, this agreement includes the timing and types of payments, the associated fees, and agreement to abide by NACHA and local ACH association rules.

Seller and Its Bank

The relationship between a seller and the bank that receives the EFT payments is perhaps the weakest link in the electronic payments cycle. Like the lockbox payment method, a seller relies upon its bank to notify it when funds and remittance advice are received. However, unlike the lockbox method, no formal agreement between a seller and its bank need exist before a buyer and seller agree to electronic payments. If the seller's bank is unprepared to promptly notify the seller of deposits and forward any accompanying remittance advice, the seller has use of the money

sooner than if the payment was made by check, but may not know what the money is for, unless it has received remittance information separately.

This weak link occurs because "Neither NACHA rules nor Treasury regulations mandate that [receiving depository financial institutions] pass... information to their customers."[3] A seller who agrees to be paid electronically in an EFT format that includes remittance advice traveling with the payment and does not first negotiate service levels with the bank could lose control of accounts receivable and find EFT more of a burden than a benefit. This is particularly true if payments are subject to buyer consolidation, discounting, or other modification that necessitate detailed explanations.

[3]*Implementing ACH Corporate Payments*, NACHA, 1987.

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13. ABSTRACT ***(Maximum 200 words)***

This report describes the electronic funds transfer (EFT) payment options that are available to payment activities as they explore EFT implementation. It evaluates those payment options and recommends the options that should be implemented at the Defense Finance and Accounting Service – Indianapolis Center. The report describes how EFT and electronic data interchange (EDI) can be integrated and presents a plan for implementation.

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